

## Three New Species of the Family Clubionidae (Arachnida: Araneae) from Taiwan

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(クモ綱: クモ目) の 3 新種

**Abstract** Three new species belonging to the family Clubionidae are described from Taiwan under the names, *Clubiona yangmingensis*, *Phrurolithus taiwanicus* and *Trachelas taiwanicus*. *Clubiona yangmingensis* belongs to the species-group of *C. trivialis* C. L. KOCH, 1843. *Phrurolithus taiwanicus* and *Trachelas taiwanicus* respectively resemble *P. labialis* PAIK, 1991 and *T. coreanus* PAIK, 1991 described from Korea.

According to the species list of spiders known from Taiwan made by CHU and OKUMA (1975), five species of the family Clubionidae were recorded from the island, that is, *Chiracanthium lascivum* KARSCH, 1879, *Clubiona japonica* L. KOCH, 1878, *C. japonicola* BÖSENBERG et STRAND, 1906, *C. jucunda* (KARSCH, 1879) and *Phrurolithus claripes* (DÖNITZ et STRAND, 1906).

Recently, ONO (1992) described a new species of the genus *Clubiona*, *C. asrevida*, from Taiwan. He also reported seven species of *Clubiona* from Iriomotejima Island, Japan, about 200 km east of Taiwan (ONO, 1989). ZHANG and HU (1991) and ZHANG (1992) described nine species of *Clubiona* from China, of which three species were collected from Fujian Province about 300 km west of Taiwan.

In 1977 and 1979, the junior author had opportunities to collect spiders in various parts of Taiwan. He published some papers of the Taiwanese spiders of the families Uloboridae and Theridiidae (YOSHIDA, 1982 and others), but many specimens have not been studied. In this paper, the authors will describe three new species of the genera *Clubiona*, *Phrurolithus* and *Trachelas* belonging to the family Clubionidae based on the junior author's collection. This new *Clubiona* species belongs to the species-group of *C. trivialis* C. L. KOCH, 1843, and resembles *C. rostrata* PAIK, 1985 described from Korea. The *Phrurolithus* and *Trachelas* species respectively resemble *P. labialis* PAIK, 1991 and *T. coreanus* PAIK, 1991 described from Korea.

All the type specimens of the new species described in this paper are deposited

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in the collection of the National Science Museum (Natural History), Tokyo.

The abbreviations used in this paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye; b, basal; d, dorsal; p, prolateral; r, retrolateral; v, ventral.

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*Clubiona yangmingensis* sp. nov.

(Figs. 1–7)

*Description* (♂, holotype; ♀, allotype). Measurements (♂/♀, in mm). Body length 2.85/2.87. Carapace length 1.22/1.53, width 0.83/0.76. Clypeus height 0.02/0.01. Abdomen length 1.39/1.34, width 0.73/0.83. Length of legs as in Table 1. Eye sizes and interdistances: AME 0.05/0.04, ALE 0.07/0.06, PME 0.06/0.05, PLE 0.07/0.05, AME–AME 0.06/0.06, AME–ALE 0.02/0.02, PME–PME 0.15/0.15, PME–PLE 0.07/0.07, MOA anterior width 0.17/0.17, posterior width 0.27/0.26, length 0.19/0.16.

*Legs.* Leg-formula IV–II–I–III. Spiniformation of the male holotype: Femur: I–IV d 1–1–1, p 1–1–1, IV r 0–0–1; patella: III–IV p 1; tibia: I–II v 2–2–0, III p 1–0, r 1–0, v 0–1–0, IV p 0–1–1, r 0–1–1, v 0–1; metatarsus: I–II v 2–0–0, III p 1–1, r 1–1, v 1–2, IV p 2–2, r 1–2, v 2–2.

*Male palp* (Figs. 4–7). Tibia with a retrolateral apophysis weakly developed. Bulb relatively simple with two tegular apophyses, the proximal one long and extending ventrad, the distal one short. Embolus long and curved, its distal part on membranous conductor.

*Female genitalia* (Figs. 1–3). The intromittent orifice small and indistinct, situated in the posterior part of epigynum. Intromittent canal transparent, extending in the anterior direction. Spermatheca reniform with a small atrium on the dorsal side.

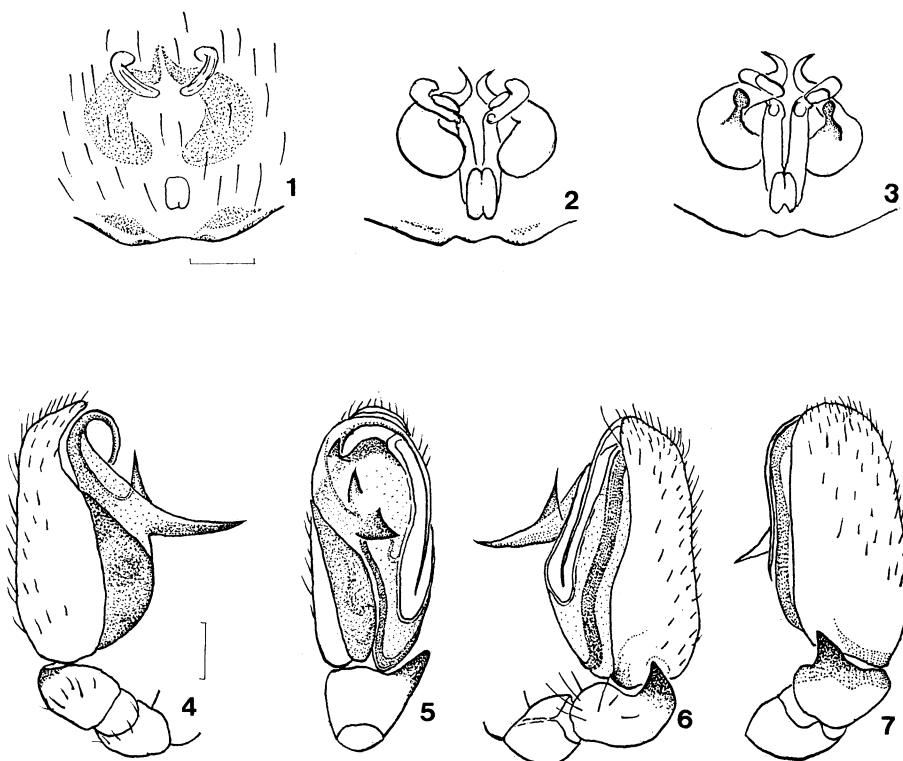
*Coloration and markings* (♂/♀). Carapace, maxillae and labium yellowish brown. Chelicerae light brown. Sternum light yellow. Legs, palps, abdomen and spinnerets pale yellow, without markings.

*Type series.* Holotype: ♂, and allotype: ♀, Mt. Yangming-shan, Taipei City, Taiwan, 3–VIII–1977, H. YOSHIDA leg., (NSMT–Ar 3026–3027).

*Range.* Taiwan (Taipei City).

Table 1. Length of legs of *Clubiona yangmingensis* sp. nov. (♂, holotype/♀, allotype).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.68/0.61	0.32/0.24	0.61/0.46	0.44/0.34	0.22/0.24	2.27/1.89
II	0.80/0.61	0.34/0.24	0.61/0.49	0.44/0.37	0.20/0.20	2.39/1.91
III	0.59/0.49	0.32/0.24	0.37/0.37	0.49/0.34	0.22/0.24	1.99/1.68
IV	0.98/0.85	0.37/0.37	0.68/0.61	0.73/0.63	0.29/0.29	3.05/2.75



Figs. 1-7. *Clubiona yangmingensis* sp. nov.—1, Epigynum, ventral view; 2, female genitalia, ventral view; 3, same, dorsal view; 4, male palp, prolateral view; 5, same, ventral view; 6, same, retrolateral view; 7, same, dorso-lateral view. Scales: 0.1 mm.

**Remarks.** The present new species belongs to the species-group represented by *Clubiona trivialis* C. L. KOCH, 1843 (MIKHAILOV, 1990), and is similar to *C. rostrata* PAIK, 1985 described from Korea and *C. subrostrata* ZHANG et HU, 1991 described from China in the shape of the genital organ. The new species can be distinguished from these two species by the male palp having a long and vertical tegular apophysis and the female genitalia with reniform spermathecae.

The specific name is an adjective derived from Mt. Yangming-shan.

***Phrurolithus taiwanicus* sp. nov.**

(Figs. 8-11)

**Description** (♀, holotype; ♂, unknown). Measurements (in mm). Body length 5.68. Carapace length 2.11, width 1.74. Clypeus height 0.13. Sternum length 1.21, width 1.00. Abdomen length 3.32, width 1.95. Length of legs as in Table 2. Eye sizes and interdistances: AME 0.11, ALE 0.11, PME 0.09, PLE 0.11, AME-AME 0.08, AME-ALE 0.04, PME-PME 0.13, PME-PL 0.08, ALE-PL 0.11, MOA anterior width 0.30, posterior width 0.32, length 0.33.

Table 2. Length of legs of *Phrurolithus taiwanicus* sp. nov. (♀, holotype).

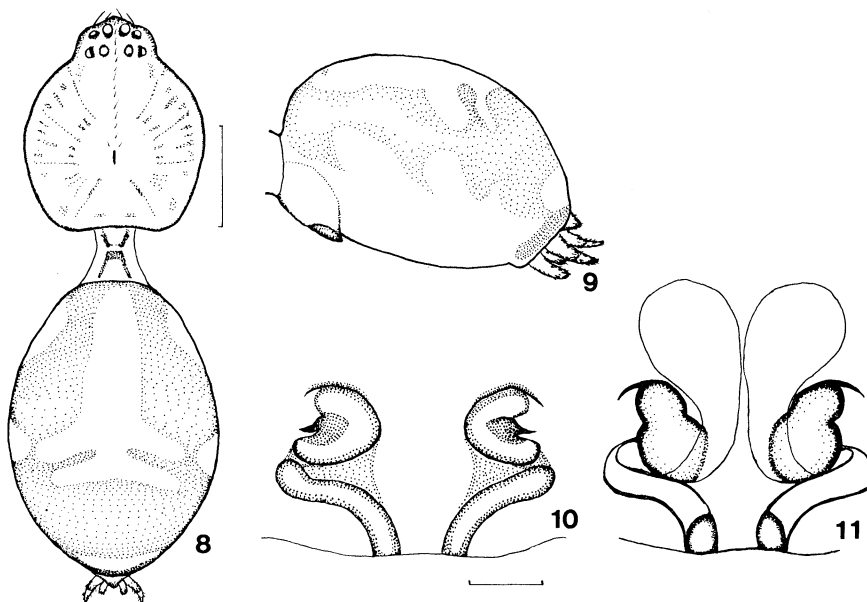
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.58	0.79	3.16	2.16	1.53	10.22
II	2.15	0.68	2.37	1.89	1.26	8.35
III	1.89	0.63	1.58	1.89	1.00	6.99
IV	2.89	0.74	2.68	3.16	1.42	10.89

Chelicerae. Dorsum with two spines. Promargin of fang furrow with two large and one small teeth, retromargin with two teeth.

Legs. Leg-formula IV-I-II-III. Spiniformation: Femur: I-IV d 1-0, I p 0-0-0-1-1-1-1-1-1-0, II p 0-0-0-0-1-1-1-1-0; tibia: I v 1b-2-2-2-1r-2-2-2-2-2-0, II v 2b-2-2-2-2-2-2-1p-0; metatarsus: I v 0-2-2-2-2-0, II v 0-1p-2-2-2-0.

Female genitalia (Figs. 10-11). Intromittent orifices situated in the posterior part of epigynum. Spermathecae each with a median depression, blackish and small; atrium a bladder organ, large, extending in the anterior direction.

Coloration and markings (♀). Carapace brown with radial dusky flecks, head region dusky. Chelicerae, maxillae, labium, sternum and legs brown without any markings. Abdomen grayish brown, dorsum with blackish flecks as shown in Figs. 8-9, both sides of the spinnerets with blackish flecks, epigastric area brown. The paratype ♀ is much darker in coloration. The juveniles are similar to the holotype in coloration.



Figs. 8-11. *Phrurolithus taiwanicus* sp. nov.—8, Female, dorsal view; 9, female abdomen, lateral view; 10, epigynum, ventral view; 11, female genitalia, dorsal view. Scales: 1 mm for Figs. 8-9; 0.2 mm for Figs. 10-11.

*Type series.* Holotype: ♀, Shuishe (beside Sun Moon Lake), Nantow County, Taiwan, 27-III-1979, H. YOSHIDA leg., (NSMT-Ar 3028). Paratype: 1♀, Mt. Yangming-shan, Taipei City, Taiwan, 7-IV-1979, H. YOSHIDA leg., (NSMT-Ar 3029).

*Other specimens.* 1♀ juv., Mt. Yangming-shan, 28-VII-1977, H. YOSHIDA leg.; 1♀ juv., Shuishe, 29-III-1979, H. YOSHIDA leg.

*Range.* Taiwan (Taipei City and Nantow County).

*Remarks.* The present new species is similar to *P. labialis* PAIK, 1991 described from Korea in the shape of the genital organ, but can be distinguished from the latter by the chelicera with two dorsal spines, the femora I-II with a dorsal and a series of prolateral spines, the abdomen with blackish flecks and the shape of the spermathecae.

*Phrurolithus claripes* (DÖNITZ et STRAND, 1906) was recorded by LEE (1964) from Taiwan. However, this record seems to be doubtful, though the authors could not examine any specimens of this spider from Taiwan.

The specific name of the new species is an adjective derived from Taiwan.

*Trachelas taiwanicus* sp. nov.

(Figs. 12-15)

*Description* (♀, holotype; ♂, unknown). Measurements (in mm). Body length 7.42. Carapace length 3.47, width 2.58. Clypeus height 0.45. Abdomen length 3.95, width 2.89. Length of legs as in Table 3. Eye sizes and interdistances: AME 0.18, ALE 0.16, PME 0.21, PLE 0.17, AME-AME 0.13, AME-ALE 0.39, PME-PME 0.21, PME-PLE 0.39, ALE-PLE 0.35, MOA anterior width 0.50, posterior width 0.58, length 0.42.

Carapace suboval, head region high, with a pair of lateral depressions as shown in Fig. 12. Chelicerae with three teeth on promargin of fang furrow and two teeth on retromargin. Leg-formula I-IV-II-III. Legs without spines.

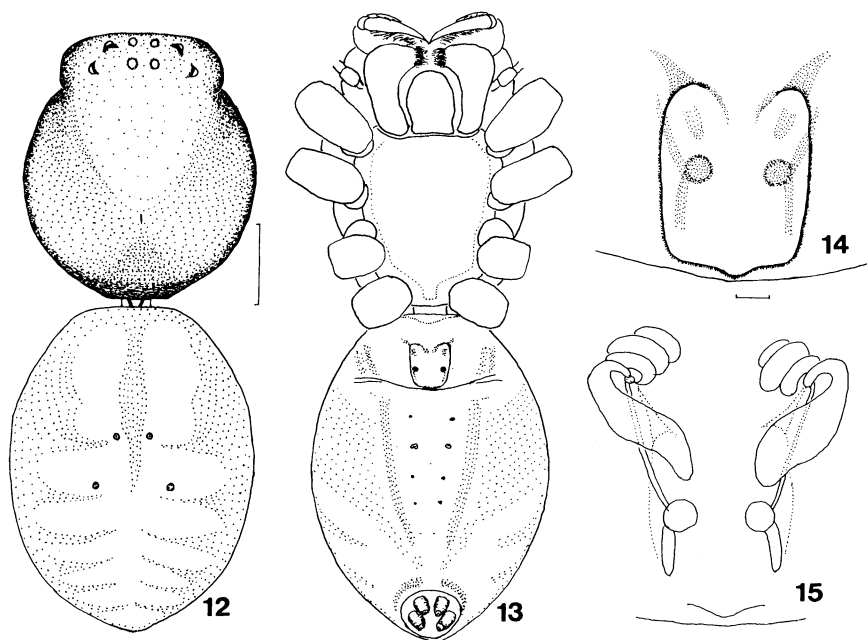
Female genitalia (Figs. 14-15). Intromittent orifices large and distinct, situated in the anterior part of epigynum. Intromittent canal thick and coiled three times. Spermatheca rounded and small, with a gland bacilliform; atrium long, thick and large, extending in the posterior direction.

Coloration and markings (♀). Carapace blackish brown, lighter in head region. Chelicerae blackish brown. Maxillae, labium and sternum dark brown, blackish margined. Legs and palps brown. Abdomen yellowish brown with blackish flecks as shown in Figs. 12-13, epigastric area brown.

*Type specimen.* Holotype: ♀, Tsitow, Nantow County, Taiwan, 19-VII-1977,

Table 3. Length of legs of *Trachelas taiwanicus* sp. nov. (♀, holotype).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.47	0.66	1.08	1.03	0.58	4.82
II	1.34	0.61	1.05	1.03	0.53	4.56
III	0.97	0.47	0.74	0.87	0.39	3.44
IV	1.26	0.55	1.03	1.32	0.47	4.63



Figs. 12–15. *Trachelas taiwanicus* sp. nov.—12, Female, dorsal view; 13, same, ventral view; 14, epigynum, ventral view; 15, female genitalia, dorsal view. Scales: 1 mm for Figs. 12–13; 0.2 mm for Figs. 14–15.

H. YOSHIDA leg., (NSMT–Ar 3030).

*Range.* Taiwan (Nantow County).

*Remarks.* The present new species resembles *T. coreanus* PAIK, 1991 described from Korea, but is distinguishable from the latter by the interomittent orifices situated in the anterior part of epigynum and the spermathecae with atrium extending in the posterior direction.

The specific name is an adjective derived from Taiwan.

### 摘 要

台湾産フクログモ科の3新種を *Clubiona yangmingensis*, *Phrurolithus taiwanicus* および *Trachelas taiwanicus* の学名で記載した。 *C. yangmingensis* は *C. trivialis* 種群に属し韓国から記載された *C. rostrata* PAIK, 1985 に似る。 *P. taiwanicus* および *T. taiwanicus* は、それぞれ、韓国で記載された *P. labialis* PAIK, 1991 および *T. coreanus* PAIK, 1991 に近似する。

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